

ABSTRACT

A measuring apparatus for detecting a change in frequency of a piezoelectric vibrating reed is realized with a simple circuit.

The circuit of the measuring apparatus includes a phase lock loop circuit 20 which includes a phase comparator 22, a loop filter 24, and a voltage-controlled oscillator 26. An oscillator circuit 10 of a piezoelectric vibrating reed 12 is connected to the phase comparator 22. An output terminal 30 is provided downstream of the loop filter 24. In a method for measuring mass from a change in oscillation frequency of the piezoelectric vibrating reed 12, an input signal from the piezoelectric vibrating reed 12 is input to the phase comparator 22 of the phase lock loop circuit 20 and the oscillation frequency of the piezoelectric vibrating reed 12 is obtained based on the output from the loop filter 24 of the phase lock loop circuit 20.